

Pre-service Teacher Experience Framing Generative Artificial Intelligence as a Thought Partner in Learning Mathematics

Zareen G. Aga

James Madison University
agazg@jmu.edu

Kimberley Wilson

University of Sunshine Coast
Kwilson7@usc.edu.au

Tracey Muir

Australian Catholic University
tracey.muir@acu.edu.au

Paul Hernandez Martinez

Swinburne University of Technology
phernandezmartinez@swin.edu.au

Generative Artificial Intelligence (GenAI) is transforming K-12 mathematics learning, offering individualised support and changing student interactions (Walkington, 2025). Pre-service teachers (PSTs) must be prepared to teach in a world where over-reliance on GenAI is a concern (Aga et al. 2024; Biton & Segal, 2025; Engelbrecht & Borba, 2024). Caution is warranted because students may use it merely for a quick solution, offloading critical thinking and productive struggle essential for developing deep mathematical understanding (Biton & Segal, 2025; Engelbrecht & Borba, 2024). PSTs need experiences in their teacher education programs to become aware of the opportunities and concerns regarding the use of GenAI in teaching and learning of mathematics (Aga et al. 2024).

This presentation will share findings from an action research cycle within a mathematics methods course. Participants were four mathematics PSTs in their final year of a teacher education program. The intervention required PSTs to develop an original mathematics task and implement it at least once with a friend or a family member. The goal of the task was to engage the participant in learning mathematics using GenAI as a thought partner. Data sources were tasks, participant work, GenAI outputs, and PST reflection post implementation.

PSTs found that GenAI use was dependent upon the user's existing knowledge. When implementing the task, participants who were confident in their mathematical content knowledge were less reliant on GenAI and more critical of GenAI output. PSTs found GenAI as a useful tool that must always be accompanied by resources (e.g., textbooks, Desmos, etc.) for students to check for accuracy of GenAI output. PSTs also stressed that teachers should teach GenAI pedagogical actions that can mediate student interaction and include guidance for students themselves to help them engage with GenAI. PSTs found GenAI to be lacking in the answers provided without student engagement in any thought-provoking dialogue.

Analysis of PSTs' activities and their reflections on this experience will be shared. In addition, recommendations on the use of GenAI as a collaborator for teachers and as a thought partner for students when learning mathematics, will be highlighted.

References

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